

SEQUENCE LISTING

<110> Allen, Stephen M.
Caimi, Perry G.
Stoop, Johan M.

<120> Fructan Biosynthetic Enzymes

<130> BB1463 US NA

<140>
<141>

<150> 60/244,273
<151> 2000-10-10

<150> 60/269,543
<151> 2001-02-16

<160> 21

<170> Microsoft Office 97

<210> 1
<211> 2080
<212> DNA
<213> Dimo

<400>	1	gcacgagctt	aatcagccca	tttcctcca	ccatgacaac	caccaaacc	tttagtgacc	60
ttgaggacgc	accctactg	aaccacaccg	aaccaccacc	accacccgcca	ccgccaactg			120
ccggaagaaa	acggtgttg	atcaagggtt	tgtcagttat	caccctactc	attttgctta			180
ttgttcagt	tttggcttc	aaccaacaaa	attcaagtc	ctccaccacc	aattcaaaat			240
cgatctcca	atccgatcgc	ctcattggg	aaagaacatc	tttccatttt	caacccgcca			300
aaaatttcat	ttacgatccc	aatgggccat	tatttcacat	gggttgtac	catctttct			360
atcaatacaa	cccgtagcgg	cctgttggg	gaaatatgtc	atggggtcac	tccggttcca			420
aagacatgat	caactgggtt	gagcttccag	tcgcattgg	cccaaccgaa	tggtacgata			480
tcgagggtgt	tttatccggg	tccaccaccg	tcctccccaa	cggtaaattc	ttcgcatgt			540
acacaggaaa	cgctaacgat	ttctcccaat	tacaatgca	agctgtaccc	gtcaacatata			600
ctgaccact	tcttacatcgag	tgggtcaaat	acgatggtaa	cccaatccctg	tataactccac			660
cagggattgg	gttaaaagac	tatcgggacc	cgtcaacagt	ctggacgggt	cccgatggaa			720
aacatcggt	gatcatggg	tctaaacgaa	acaaaacggg	actagtaactt	gtttaccaca			780
caaccgattt	cacaatttat	gtgatgtcgg	atgagccgtt	gcattcggt	cctaataccg			840
atatgtggg	atgcgttgac	tttacctg	tttcgttgac	caatgatagc	gchgcttgata			900
tgccggctt	tgggtcggt	atcaaacacg	tgattaaaga	aagttggag	ggacatggaa			960
tggattggta	ttcgattggg	acttatgat	catcaaccga	taaatggact	ccggataacc			1020
cgaaaattaga	tgtgggtatc	ggggtgcgt	gtgattacgg	aaagttttt	gcatcgaaga			1080
gtctttcga	tccgttgaag	aaaaggaggg	tgacttgggg	ttatgttggg	gaatcagata			1140
aacctgatca	ggacacctct	agaggatggg	ctaccattta	taatgttgc	ccgacgggtgg			1200
tactagatag	aaagaccgga	acacatctac	ttcattggcc	agttgaagaa	atcgagagtt			1260
tgagatccaa	tggtcaagaa	ttcaacgaga	ttgaactcaa	accgggttcg	atcattccac			1320
ttgacatagg	ctcggtact	cagttggaca	tagttgcac	atttgaagt	gatcaagat			1380
cgtgaaagc	tataagtgaa	accaacgaag	aatatatttg	tacaaaagc	tggggtgacag			1440
ccggaaggggg	aagttggga	ccattttggg	ttgcgggttt	agccgatgga	acactttcag			1500
agtttaactcc	cgtgtatcc	tacatagct	aaaatacgg	tggaaagt	gcaacacatt			1560
tttgtaccga	taagctaaag	tcatcactag	attatgatcg	tggaaagagt	gtgtatggaa			1620
gcactgtccc	tgtgtttgat	ggtgaagaac	tcacaatgag	gttattgggt	gaccattcgg			1680
tagtagaagg	gttgcgca	ggaggaagga	cggtaataac	atcaagggtc	tatccgacaa			1740
aggcaatata	cgacaaacgca	aagggttct	tattcaacaa	cgctactgg	acgagtgtga			1800
aqqcqctct	caagatttg	caaattggct	ctgcccagat	taaaccttac	cctcttaat			1860

catatgttcc atttcactct cactagaaca cttgctgtta ctattattgt atcttatatt 1920
ttttatatgt acgtaataat taccgttgg atgggttgtt tttgttcaac ctctgcattg 1980
tggttaagt agtaagccgc gattatttt ataatatgaa taggttgtt tggtcaaaaa 2040
aaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa 2080

<210> 2
<211> 608
<212> PRT
<213> Dimorphotheca sinuata

<400> 2
Met Thr Thr Thr Lys Pro Phe Ser Asp Leu Glu Asp Ala Pro Leu Leu
1 5 10 15

Asn His Thr Glu Pro Pro Pro Pro Pro Pro Pro Pro Thr Ala Gly Arg
20 25 30

Lys Arg Leu Leu Ile Lys Val Val Ser Val Ile Thr Leu Leu Ile Leu
35 40 45

Leu Ile Val Ser Val Leu Phe Leu Asn Gln Gln Asn Ser Ser His Ser
50 55 60

Thr Thr Asn Ser Lys Ser Ile Ser Gln Ser Asp Arg Leu Ile Trp Glu
65 70 75 80

Arg Thr Ser Phe His Phe Gln Pro Ala Lys Asn Phe Ile Tyr Asp Pro
85 90 95

Asn Gly Pro Leu Phe His Met Gly Trp Tyr His Leu Phe Tyr Gln Tyr
100 105 110

Asn Pro Tyr Gly Pro Val Trp Gly Asn Met Ser Trp Gly His Ser Val
115 120 125

Ser Lys Asp Met Ile Asn Trp Phe Glu Leu Pro Val Ala Leu Val Pro
130 135 140

Thr Glu Trp Tyr Asp Ile Glu Gly Val Leu Ser Gly Ser Thr Thr Val
145 150 155 160

Leu Pro Asn Gly Gln Ile Phe Ala Leu Tyr Thr Gly Asn Ala Asn Asp
165 170 175

Phe Ser Gln Leu Gln Cys Lys Ala Val Pro Val Asn Ile Ser Asp Pro
180 185 190

Leu Leu Ile Glu Trp Val Lys Tyr Asp Gly Asn Pro Ile Leu Tyr Thr
195 200 205

Pro Pro Gly Ile Gly Leu Lys Asp Tyr Arg Asp Pro Ser Thr Val Trp
210 215 220

Thr Gly Pro Asp Gly Lys His Arg Met Ile Met Gly Ser Lys Arg Asn
225 230 235 240

Lys Thr Gly Leu Val Leu Val Tyr His Thr Thr Asp Phe Thr Asn Tyr
245 250 255

Val Met Ser Asp Glu Pro Leu His Ser Val Pro Asn Thr Asp Met Trp
 260 265 270
 Glu Cys Val Asp Phe Tyr Pro Val Ser Leu Thr Asn Asp Ser Ala Leu
 275 280 285
 Asp Met Ala Ala Tyr Gly Ser Gly Ile Lys His Val Ile Lys Glu Ser
 290 295 300
 Trp Glu Gly His Gly Met Asp Trp Tyr Ser Ile Gly Thr Tyr Asp Ala
 305 310 315 320
 Ser Thr Asp Lys Trp Thr Pro Asp Asn Pro Lys Leu Asp Val Gly Ile
 325 330 335
 Gly Leu Arg Cys Asp Tyr Gly Lys Phe Phe Ala Ser Lys Ser Leu Phe
 340 345 350
 Asp Pro Leu Lys Lys Arg Arg Val Thr Trp Gly Tyr Val Gly Glu Ser
 355 360 365
 Asp Lys Pro Asp Gln Asp Leu Ser Arg Gly Trp Ala Thr Ile Tyr Asn
 370 375 380
 Val Ala Arg Thr Val Val Leu Asp Arg Lys Thr Gly Thr His Leu Leu
 385 390 395 400
 His Trp Pro Val Glu Glu Ile Glu Ser Leu Arg Ser Asn Gly Gln Glu
 405 410 415
 Phe Asn Glu Ile Glu Leu Lys Pro Gly Ser Ile Ile Pro Leu Asp Ile
 420 425 430
 Gly Ser Ala Thr Gln Leu Asp Ile Val Ala Thr Phe Glu Val Asp Gln
 435 440 445
 Asp Ala Leu Lys Ala Ile Ser Glu Thr Asn Glu Glu Tyr Ile Cys Thr
 450 455 460
 Lys Ser Trp Gly Ala Ala Gly Arg Gly Ser Leu Gly Pro Phe Gly Val
 465 470 475 480
 Ala Val Leu Ala Asp Gly Thr Leu Ser Glu Leu Thr Pro Val Tyr Phe
 485 490 495
 Tyr Ile Ala Lys Asn Thr Asp Gly Ser Val Ala Thr His Phe Cys Thr
 500 505 510
 Asp Lys Leu Arg Ser Ser Leu Asp Tyr Asp Arg Glu Arg Val Val Tyr
 515 520 525
 Gly Ser Thr Val Pro Val Leu Asp Gly Glu Glu Leu Thr Met Arg Leu
 530 535 540
 Leu Val Asp His Ser Val Val Glu Gly Phe Ala Gln Gly Arg Thr
 545 550 555 560
 Val Ile Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Asp Asn Ala
 565 570 575

Lys Val Phe Leu Phe Asn Asn Ala Thr Gly Thr Ser Val Lys Ala Ser
580 585 590

Leu Lys Ile Trp Gln Met Ala Pro Ala Gln Ile Lys Pro Tyr Pro Leu
595 600 605

<210> 3

2146

<212> DNA

<213> *Parthenium argentatum* Grey

<400> 3

<210> 4

<211> 609

<212> PRT

<213> *Parthenium argentatum* Grey

<400> 4

Met	Thr	Thr	Pro	Glu	Gln	Pro	Ile	Thr	Asp	Leu	Glu	His	Glu	Pro	Asn
1				5					10					15	

His	Asn	Arg	Thr	Pro	Leu	Leu	Asp	His	Asn	Glu	Ser	Gln	Pro	Val	Lys
				20					25				30		
Lys	His	Leu	Phe	Phe	Lys	Val	Leu	Ser	Gly	Val	Thr	Phe	Ile	Ser	Leu
				35				40			45				
Phe	Phe	Ile	Ser	Ala	Phe	Leu	Phe	Ile	Val	Leu	Asn	Gln	Gln	Asn	Ser
				50				55			60				
Thr	Asn	Ile	Ser	Val	Lys	Tyr	Ser	Gln	Ser	Asp	Arg	Leu	Thr	Trp	Glu
				65			70			75			80		
Arg	Thr	Ala	Phe	His	Phe	Gln	Pro	Ala	Lys	Asn	Phe	Ile	Tyr	Asp	Pro
				85				90			95				
Asn	Gly	Gln	Met	Tyr	Tyr	Met	Gly	Trp	Tyr	His	Leu	Phe	Tyr	Gln	Tyr
				100				105			110				
Asn	Pro	Tyr	Ala	Pro	Val	Trp	Gly	Asn	Met	Ser	Trp	Gly	His	Ser	Val
				115				120			125				
Ser	Lys	Asp	Met	Ile	Asn	Trp	Tyr	Glu	Leu	Pro	Val	Ala	Ile	Val	Pro
				130				135			140				
Thr	Glu	Trp	Tyr	Asp	Ile	Glu	Gly	Val	Leu	Ser	Gly	Ser	Ile	Thr	Val
				145			150			155			160		
Leu	Pro	Asn	Gly	Gln	Ile	Phe	Ala	Leu	Tyr	Thr	Gly	Asn	Ala	Asn	Asp
				165				170			175				
Phe	Ser	Gln	Leu	Gln	Cys	Lys	Ala	Val	Pro	Val	Asn	Ser	Ser	Asp	Pro
				180				185			190				
Leu	Leu	Val	Glu	Trp	Val	Lys	Tyr	Glu	Asp	Asn	Pro	Ile	Leu	Tyr	Thr
				195				200			205				
Pro	Pro	Gly	Ile	Gly	Leu	Lys	Asp	Tyr	Arg	Asp	Pro	Ser	Thr	Val	Trp
				210				215			220				
Thr	Gly	Pro	Asp	Gly	Lys	His	Arg	Met	Ile	Met	Gly	Thr	Lys	Arg	Gly
				225				230			235			240	
Asn	Thr	Gly	Met	Ile	Leu	Val	Tyr	His	Thr	Thr	Asp	Tyr	Thr	Asn	Tyr
				245				250			255				
Glu	Met	Leu	Asn	Glu	Pro	Met	His	Ser	Val	Pro	Asn	Thr	Asp	Met	Trp
				260				265			270				
Glu	Cys	Val	Asp	Phe	Tyr	Pro	Val	Ser	Leu	Thr	Asn	Asp	Ser	Ala	Leu
				275				280			285				
Asp	Ile	Ala	Ala	Tyr	Gly	Ser	Gly	Ile	Lys	His	Val	Ile	Lys	Glu	Ser
				290				295			300				
Trp	Glu	Gly	Tyr	Gly	Met	Asp	Phe	Tyr	Ser	Ile	Gly	Thr	Tyr	Asp	Ala
				305				310			315			320	
Phe	Asn	Asp	Lys	Trp	Thr	Pro	Asp	Asn	Pro	Glu	Leu	Asp	Val	Gly	Ile
				325				330			335				

Gly Leu Arg Cys Asp Tyr Gly Arg Phe Phe Ala Ser Lys Ser Ile Phe
 340 345 350
 Asp Pro Val Lys Lys Arg Arg Ile Thr Trp Ala Tyr Val Gly Glu Ser
 355 360 365
 Asp Asn Ala Asp Asp Asp Leu Ser Arg Gly Trp Ala Thr Ile Tyr Asn
 370 375 380
 Val Gly Arg Thr Ile Val Leu Asp Arg Lys Thr Gly Thr His Leu Leu
 385 390 395 400
 His Trp Pro Val Glu Glu Ile Glu Ser Leu Arg Tyr Asn Gly Gln Glu
 405 410 415
 Phe Lys Glu Ile Lys Leu Glu Pro Gly Ser Ile Ala Pro Leu Asp Ile
 420 425 430
 Gly Thr Ala Thr Gln Leu Asp Ile Val Ala Thr Phe Lys Val Asp Glu
 435 440 445
 Ala Ala Leu Asn Ala Thr Ser Glu Thr Asp Asp Asn Phe Ala Cys Thr
 450 455 460
 Thr Ser Ser Gly Ala Val Glu Arg Gly Ser Leu Gly Pro Phe Gly Leu
 465 470 475 480
 Ala Val Leu Ala Asp Gly Thr Leu Ser Glu Leu Thr Pro Val Tyr Phe
 485 490 495
 Tyr Ile Ala Lys Lys Ala Asp Gly Gly Val Ser Thr His Phe Cys Thr
 500 505 510
 Asp Lys Leu Arg Ser Ser Leu Asp Phe Asp Lys Glu Arg Val Val Tyr
 515 520 525
 Gly Ser Thr Val Pro Val Leu Asp Asp Glu Glu Leu Thr Met Arg Leu
 530 535 540
 Leu Val Asp His Ser Val Val Glu Ala Phe Ala Gln Gly Arg Ile
 545 550 555 560
 Ala Ile Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Glu Gly Ala
 565 570 575
 Lys Leu Phe Leu Phe Asn Asn Ala Thr Asp Thr Ser Val Lys Ala Ser
 580 585 590
 Leu Lys Ile Trp Gln Met Ala Ser Ala Gln Ile His Gln Tyr Glu Phe
 595 600 605

Asn

<210> 5
 <211> 1333
 <212> DNA
 <213> Helianthus sp.

<400> 5
gcacgaggc aacagtctgg acaggtcccc atggaaagca taggatgatc atggatcta 60
aacgtggcaa tacaggcatg atactcggtt accataaccac cgattacacg aactacgagt 120
tggatga gccgttcac tccgttccca acaccatat gtggaatgc gtcgactttt 180
acccggtttc gttaaccaat gatagtgcac ttgatatggc ggcctatggg tcgggtatca 240
aacacgttat taaagaaaat tgggaggggac atggaatgga ttggatttca atcgggacat 300
atgacgcgat aaatgataaa tggactcccg ataaccggc actagatgtc ggtatcggtt 360
tacggtgca ttagggaaat tttttgcataaagagatct ttatgaccca ttgaagaaaa 420
ggagggtcac ttgggttat gttggagaat cagatagtgt tgaccaggac ctctctagag 480
gatgggctac tgttataat gttggaaagaa caattgtact agatagaaaa accgggaccc 540
atttacttca ttggcccgtt gaggaggctg agagtttagt atacaacggt caggagttt 600
aagagatcga gctagagccc ggttcaatca ttccactcga cataggcact gctacacagt 660
tggacatagt tgcaacattt gagggtggatc aagcagcgtt gaacgcgaca agtggaaaccg 720
atgatatttta tgggtgcacc actagcttag gtgcagccca aaggggaaat ttgggaccat 780
ttggtcttgc ggttctagcc gatggaaaccc tttctgagtt aactccgggtt tatttctaca 840
ttgctaaaaaa ggccgatggc ggtttgtcga cacatttttgcatacgatcat 900
caactggatta tgatggacag agagtgggtt atgggagcac tggcctgtt ttagatgtt 960
aagaactcac aatgaggcata tgggtggatc attcgatagt agaggggtt ggcgaaggag 1020
gaaggacggt tataacatca agggtgtatc caacaaaagc gatatacgaa caagcgaagt 1080
tggcttgc tggcttgc acaattcat caatactcgt ttaatttacc ggctattgtt atcttttgtt 1140
tattggatt tatgtatctt aattttctt taaacctttt tatttgataa atattggttc 1200
ttgttattgtt gattctagta gtaaatgaat ggtgtttgg gttatctgtt aaaaaaaaaa 1260
aaaaaaaaaaa aaa 1320
1333

<210> 6

<211> 390

<212> PRT

<213> Helianthus sp.

<400> 6

Thr	Arg	Ser	Thr	Val	Trp	Thr	Gly	Pro	Asp	Gly	Lys	His	Arg	Met	Ile
1				5				10					15		

Met	Gly	Ser	Lys	Arg	Gly	Asn	Thr	Gly	Met	Ile	Leu	Val	Tyr	His	Thr
								25					30		

Thr	Asp	Tyr	Thr	Asn	Tyr	Glu	Leu	Leu	Asp	Glu	Pro	Leu	His	Ser	Val
								35				40		45	

Pro	Asn	Thr	Asp	Met	Trp	Glu	Cys	Val	Asp	Phe	Tyr	Pro	Val	Ser	Leu
				50				55				60			

Thr	Asn	Asp	Ser	Ala	Leu	Asp	Met	Ala	Ala	Tyr	Gly	Ser	Gly	Ile	Lys
					65			70			75			80	

His	Val	Ile	Lys	Glu	Ser	Trp	Glu	Gly	His	Gly	Met	Asp	Trp	Tyr	Ser
								85			90		95		

Ile	Gly	Thr	Tyr	Asp	Ala	Ile	Asn	Asp	Lys	Trp	Thr	Pro	Asp	Asn	Pro
					100				105			110			

Glu	Leu	Asp	Val	Gly	Ile	Gly	Leu	Arg	Cys	Asp	Tyr	Gly	Lys	Phe	Phe
					115			120			125				

Ala	Ser	Lys	Ser	Leu	Tyr	Asp	Pro	Leu	Lys	Lys	Arg	Arg	Val	Thr	Trp
								130		135		140			

Ala	Tyr	Val	Gly	Glu	Ser	Asp	Ser	Val	Asp	Gln	Asp	Leu	Ser	Arg	Gly
								145		150		155		160	

Trp Ala Thr Val Tyr Asn Val Gly Arg Thr Ile Val Leu Asp Arg Lys
 165 170 175
 Thr Gly Thr His Leu Leu His Trp Pro Val Glu Glu Val Glu Ser Leu
 180 185 190
 Arg Tyr Asn Gly Gln Glu Phe Lys Glu Ile Glu Leu Glu Pro Gly Ser
 195 200 205
 Ile Ile Pro Leu Asp Ile Gly Thr Ala Thr Gln Leu Asp Ile Val Ala
 210 215 220
 Thr Phe Glu Val Asp Gln Ala Ala Leu Asn Ala Thr Ser Glu Thr Asp
 225 230 235 240
 Asp Ile Tyr Gly Cys Thr Thr Ser Leu Gly Ala Ala Gln Arg Gly Ser
 245 250 255
 Leu Gly Pro Phe Gly Leu Ala Val Leu Ala Asp Gly Thr Leu Ser Glu
 260 265 270
 Leu Thr Pro Val Tyr Phe Tyr Ile Ala Lys Lys Ala Asp Gly Gly Leu
 275 280 285
 Ser Thr His Phe Cys Thr Asp Lys Leu Arg Ser Ser Leu Asp Tyr Asp
 290 295 300
 Gly Gln Arg Val Val Tyr Gly Ser Thr Val Pro Val Leu Asp Asp Glu
 305 310 315 320
 Glu Leu Thr Met Arg Leu Leu Val Asp His Ser Ile Val Glu Gly Phe
 325 330 335
 Ala Gln Gly Gly Arg Thr Val Ile Thr Ser Arg Val Tyr Pro Thr Lys
 340 345 350
 Ala Ile Tyr Glu Gln Ala Lys Leu Phe Leu Phe Asn Asn Ala Thr Gly
 355 360 365
 Thr Ser Val Lys Ala Ser Leu Lys Ile Trp Gln Met Ala Ser Ala Gln
 370 375 380
 Ile His Gln Tyr Ser Phe
 385 390
 <210> 7
 <211> 1844
 <212> DNA
 <213> Triticum aestivum
 <400> 7
 gcacgagggt gggccacgccc gtctctcgga accttgcac gtggcgcacc ctccctattg 60
 ccatggtggc cgaccagtgg tacgacatcc tcggggctct ctggggctct atgacgggtgc 120
 tacccaatgg caccgtcatc atgatctaca cgggggccac caacgcctcc gccattgagg 180
 tgcagtgcatt cggcaccccc gcccggccac acgaccctt cctccgcgc tggaccaagc 240
 acccccgcgaa ccccgatcatc ttgtcgccgc cggggatcg caccaggat tttcgagacc 300
 cgtatgaccgc ttggtaatcgat gaatctgatc acacatggcg cacccttcctc gggccaagg 360
 acgaccagga cggccaccac gatgggatcg ccatgatgtca caagaccaag gacttcctta 420
 actatgacgt catcccgggc atcttgatc gagtcgagcg caccggcgag tggagtgca 480

tcgacttcta ccctgtcggt cgccgttagca gcgacaactc atcggagatg ttgcacgtgt 540
 tgaaggcgag catggacgat gaacgacacg actactactc gctaggcacg tacgactcg 600
 cagcaaacac gtggacgccc attgaccggg acctcgactt ggggatcggt ctgaggtacg 660
 attggggtaa gttttatgcg tccacctcg tctatgatcc ggcgaagaag cggcgcgtgc 720
 tcatggggta cgtcggcgag gtcgactcca agcgggctga tgtcgtgaag ggatgggc 780
 caattcagtc agttccaagg acaattgctc tcgacgagaa gacccggacg aacccctcc 840
 tctggcccg ggaggagatt gagaccctcc gcctcaatgc cactgaactt agcgacgtca 900
 ccatgaacac cggctccgtc atccatatcc ccctccgcca aggcaactcg cttgacatcg 960
 aggcaacttt ccacccgtat gcttctgccc tcgctgcctt caatgaggcc gatgtggct 1020
 acaaactgcag cagcagcggc ggtgctgtta acccgccgcg qctaggcccc ttccgcctcc 1080
 tcgtccctcg tgctgtgac cgccgcggc agcaaacggc ggtgacttc tacgtgtcta 1140
 gggggccttga tggagccctc cataccagct tctgccaaga tgagttacgg tcgtcacggg 1200
 ccaaggacgt gacaaggcgg gtgattggga gcacgggtgcc ggtgctcgac ggcgaggctt 1260
 tctcaatgag ggtgctcggt gaccactcca tcgtcaggg cttcgcatg ggcgggagga 1320
 ccacgatgac gtcgcgggtg taccggatgg aggccatca ggaggcaaaa gtgtacttgt 1380
 tcaacaatgc caccggtgcc agcgttatgg cggaaaggct cgtcgtgcac gagatggact 1440
 cggcacacaa ccagctctcc aatatggacg attactcgta tttcaatga agctcttgca 1500
 ttcatcagt aataagctac attggatcaa agacgctcac caaggaaggc caagacatat 1560
 gtaaacgatt ccgcacagcc tcgcttgac aattgaaaca tctatcctt ggtcatgttc 1620
 tgcattgatg tcacagtgaa ctatattact ttgttgggtg taggatcgat atagtttggg 1680
 tgggtggAAC tttgtttgtt tacatagtgaa accgggtgtgg tctgcgtaat aagcttacgt 1740
 gtttggtag aaaaatgaaact attgttggatc gggagaaaaaa aaaaaaaaaaaa aaaaaaaaaa 1800
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 1844

<210> 8
 <211> 495
 <212> PRT
 <213> Triticum aestivum

<400> 8				
Thr Arg Trp Gly His Ala Val Ser Arg Asn Leu Val Thr Trp Arg Thr				
1	5	10	15	
Leu Pro Ile Ala Met Val Ala Asp Gln Trp Tyr Asp Ile Leu Gly Val				
20		25	30	
Leu Ser Gly Ser Met Thr Val Leu Pro Asn Gly Thr Val Ile Met Ile				
35		40	45	
Tyr Thr Gly Ala Thr Asn Ala Ser Ala Ile Glu Val Gln Cys Ile Ala				
50		55	60	
Thr Pro Ala Asp Pro Asn Asp Pro Phe Leu Arg Arg Trp Thr Lys His				
65		70	75	80
Pro Ala Asn Pro Val Ile Trp Ser Pro Pro Gly Ile Gly Thr Lys Asp				
85		90	95	
Phe Arg Asp Pro Met Thr Ala Trp Tyr Asp Glu Ser Asp Asp Thr Trp				
100		105	110	
Arg Thr Leu Leu Gly Ser Lys Asp Asp Gln Asp Gly His His Asp Gly				
115		120	125	
Ile Ala Met Met Tyr Lys Thr Lys Asp Phe Leu Asn Tyr Glu Leu Ile				
130		135	140	
Pro Gly Ile Leu His Arg Val Glu Arg Thr Gly Glu Trp Glu Cys Ile				
145		150	155	160

Asp Phe Tyr Pro Val Gly Arg Arg Ser Ser Asp Asn Ser Ser Glu Met
 165 170 175
 ,
 Leu His Val Leu Lys Ala Ser Met Asp Asp Glu Arg His Asp Tyr Tyr
 180 185 190
 Ser Leu Gly Thr Tyr Asp Ser Ala Ala Asn Thr Trp Thr Pro Ile Asp
 195 200 205
 Pro Asp Leu Asp Leu Gly Ile Gly Leu Arg Tyr Asp Trp Gly Lys Phe
 210 215 220
 Tyr Ala Ser Thr Ser Phe Tyr Asp Pro Ala Lys Lys Arg Arg Val Leu
 225 230 235 240
 Met Gly Tyr Val Gly Glu Val Asp Ser Lys Arg Ala Asp Val Val Lys
 245 250 255
 Gly Trp Ala Ser Ile Gln Ser Val Pro Arg Thr Ile Ala Leu Asp Glu
 260 265 270
 Lys Thr Arg Thr Asn Leu Leu Leu Trp Pro Val Glu Glu Ile Glu Thr
 275 280 285
 Leu Arg Leu Asn Ala Thr Glu Leu Ser Asp Val Thr Met Asn Thr Gly
 290 295 300
 Ser Val Ile His Ile Pro Leu Arg Gln Gly Thr Gln Leu Asp Ile Glu
 305 310 315 320
 Ala Thr Phe His Leu Asp Ala Ser Ala Val Ala Ala Leu Asn Glu Ala
 325 330 335
 Asp Val Gly Tyr Asn Cys Ser Ser Gly Gly Ala Val Asn Arg Gly
 340 345 350
 Ala Leu Gly Pro Phe Gly Leu Leu Val Leu Ala Ala Gly Asp Arg Arg
 355 360 365
 Gly Glu Gln Thr Ala Val Tyr Phe Tyr Val Ser Arg Gly Leu Asp Gly
 370 375 380
 Gly Leu His Thr Ser Phe Cys Gln Asp Glu Leu Arg Ser Ser Arg Ala
 385 390 395 400
 Lys Asp Val Thr Lys Arg Val Ile Gly Ser Thr Val Pro Val Leu Asp
 405 410 415
 Gly Glu Ala Phe Ser Met Arg Val Leu Val Asp His Ser Ile Val Gln
 420 425 430
 Gly Phe Ala Met Gly Gly Arg Thr Thr Met Thr Ser Arg Val Tyr Pro
 435 440 445
 Met Glu Ala Tyr Gln Glu Ala Lys Val Tyr Leu Phe Asn Asn Ala Thr
 450 455 460
 Gly Ala Ser Val Met Ala Glu Arg Leu Val Val His Glu Met Asp Ser
 465 470 475 480

Ala His Asn Gln Leu Ser Asn Met Asp Asp Tyr Ser Tyr Val Gln
485 490 495

<210> 9
<211> 1612
<212> DNA
<213> Trit

<400> 9

gcacgagacg	acatcctggg	ggtccttgc	ggctctatga	cgggtctacc	aaatggcacf	60
gtcatcatga	tctacacggg	ggccaccaac	gcccgtcgcc	ttgagggtca	gtgcacgc	120
accccccgcg	accccaacga	cccccttcctc	ccggcgtgg	ccaagcaccc	cgccaaacccc	180
gtcatctgg	cgcccgggg	gatcgccacc	aaggattttc	gagacccgt	gactgttgg	240
tacatgtaat	ctgatgacac	atggcgccacc	ctccctgggt	ccaaggatga	ccacgacgg	300
caccacatg	ggatcgccat	gatgtacaag	accaaggact	tccttaacta	cgagctcatc	360
ccgggtatct	tgcatcgagt	ccagcgccacc	ggcgagtggg	agtgcattga	cttctaccct	420
gtcgccaca	gaagcaacga	caactcatcg	gagatgttgc	acgtgttga	ggcgagcatg	480
gacgacgaac	ggcacgacta	ctactcgcta	ggcacgtacg	actcggcagc	aaacgcgtgg	540
acgcccgtcg	acccggagct	cgacttgggg	atcgggctga	gatacgactg	gggttaagtt	600
tatgcgtcca	cctcggtctca	tgatccggca	aaaagcggc	gctgtctgat	ggggtaacgtc	660
ggcgaggtcg	actccaagcg	ggctgtatgc	gtgaagggat	gggcctcgat	tcaagtcaatt	720
ccaaggacaa	ttgctctcg	cgagaagacc	cgacgaaacc	tcctcctctg	gcccgtggag	780
gagattgaga	ccctccgcct	caacggccacc	gaacttagcg	acgtcaccct	taacaccggc	840
tccgtcatcc	atatcccgct	ccgccaaggc	actcagctcg	acatcgaggc	aactttccac	900
ctttagtctt	ctggcgctcg	tgccctcaat	gaggccgtat	tgggtacaa	ctgcagcagc	960
agcggcggtg	ctgttaaccg	cgccgcgtca	ggccccctcg	gcctcctcg	cctcgctgct	1020
ggtgaccgccc	gtggcgagca	aacggcggtg	tatttctacg	tgtctagggg	gctcgacgg	1080
ggcctccata	ccagcttctg	ccaagacgag	ttgcggtcgt	cacgggcca	ggatgtgacg	1140
aagcggtga	ttgggagcac	ggtgccgggt	ctcgacggcg	aggcttctc	gatgaggggt	1200
ctcgtgacc	actccatcg	gcagggcttc	gcatggggcg	ggaggaccac	gatgacgtcg	1260
cgggtgtacc	cgatggaggc	ctatcaggag	gcaaaaagtgt	acttggtcaa	caatgcgacc	1320
ggtgccagcg	tcatggcgga	aaggctcg	gtgcacgaga	tggactcagc	acacaaccag	1380
ctctccata	tgcacgatca	ctcgatgtt	caatgaagct	ttgcacatctc	atcagtaata	1440
agctacattg	gatcaaagac	gcccaccaag	gaaggccaag	acatatgtaa	atgattccgc	1500
acagccctcg	ttgcagaatt	gaaacatcta	tccttgggtc	atgttctgca	ttgatgtcac	1560
tgtqaactac	atatatattac	tttggggc	gtagaaaaaa	aaaaaaaaaa	aa	1612

<210> 10

<211> 471

<212> PRT

<213> *Triticum aestivum*

<400> 10

Ala Arg Asp Asp Ile Leu Gly Val Leu Ser Gly Ser Met Thr Val Leu
 1 5 10 15

Pro Asn Gly Thr Val Ile Met Ile Tyr Thr Gly Ala Thr Asn Ala Ser
20 25 30

Ala Val Glu Val Gln Cys Ile Ala Thr Pro Ala Asp Pro Asn Asp Pro
35 40 45

Phe Leu Arg Arg Trp Thr Lys His Pro Ala Asn Pro Val Ile Trp Ser
50 55 60

Pro Pro Gly Ile Gly Thr Lys Asp Phe Arg Asp Pro Met Thr Ala Trp
65 70 75 80

Tyr Asp Glu Ser Asp Asp Thr Trp Arg Thr Leu Leu Gly Ser Lys Asp
85 90 95

Asp His Asp Gly His His Asp Gly Ile Ala Met Met Tyr Lys Thr Lys
 100 105 110

Asp Phe Leu Asn Tyr Glu Leu Ile Pro Gly Ile Leu His Arg Val Gln
 115 120 125

Arg Thr Gly Glu Trp Glu Cys Ile Asp Phe Tyr Pro Val Gly His Arg
 130 135 140

Ser Asn Asp Asn Ser Ser Glu Met Leu His Val Leu Lys Ala Ser Met
 145 150 155 160

Asp Asp Glu Arg His Asp Tyr Tyr Ser Leu Gly Thr Tyr Asp Ser Ala
 165 170 175

Ala Asn Ala Trp Thr Pro Ile Asp Pro Glu Leu Asp Leu Gly Ile Gly
 180 185 190

Leu Arg Tyr Asp Trp Gly Lys Phe Tyr Ala Ser Thr Ser Phe Tyr Asp
 195 200 205

Pro Ala Lys Lys Arg Arg Val Leu Met Gly Tyr Val Gly Glu Val Asp
 210 215 220

Ser Lys Arg Ala Asp Val Val Lys Gly Trp Ala Ser Ile Gln Ser Val
 225 230 235 240

Pro Arg Thr Ile Ala Leu Asp Glu Lys Thr Arg Thr Asn Leu Leu Leu
 245 250 255

Trp Pro Val Glu Glu Ile Glu Thr Leu Arg Leu Asn Ala Thr Glu Leu
 260 265 270

Ser Asp Val Thr Leu Asn Thr Gly Ser Val Ile His Ile Pro Leu Arg
 275 280 285

Gln Gly Thr Gln Leu Asp Ile Glu Ala Thr Phe His Leu Asp Ala Ser
 290 295 300

Ala Val Ala Ala Leu Asn Glu Ala Asp Val Gly Tyr Asn Cys Ser Ser
 305 310 315 320

Ser Gly Gly Ala Val Asn Arg Gly Ala Leu Gly Pro Phe Gly Leu Leu
 325 330 335

Val Leu Ala Ala Gly Asp Arg Arg Gly Glu Gln Thr Ala Val Tyr Phe
 340 345 350

Tyr Val Ser Arg Gly Leu Asp Gly Gly Leu His Thr Ser Phe Cys Gln
 355 360 365

Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys Arg Val Ile
 370 375 380

Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Phe Ser Met Arg Val
 385 390 395 400

Leu Val Asp His Ser Ile Val Gln Gly Phe Ala Met Gly Gly Arg Thr
 405 410 415

Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln Glu Ala Lys
420 425 430

Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Met Ala Glu Arg
435 440 445

Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu Ser Asn Met
450 455 460

Asp Asp His Ser Tyr Val Gln
465 470

<210> 11

<211> 476

<212> DNA

<213> *Triticum aestivum*

<400> 11

gcacgagcca cgatgacgtc gcgggtgtac ccgatggagg cctatcagga ggcaaaagtg 60
tacttgttca acaatgccac cgggtgccagc gttacggcgg aaaggctcg tctgcacgag 120
atggacttag cacacaacca gctctccaaat atggacgatt actcgatgt tcaatgaagc 180
tcttgcatct catcagtaat aagctacatt ggatcaaaga cgctcaccaa ggaaggccaa 240
gacatatatt taaacgattc cgcacagcct cgcttgcaga attgaaacat ctatccttgg 300
gtcatgttct gcatttgatgt cacagtgaac tatattactt tggtgggtgt aggatcgata 360
tagtttgggt gggtggaact ttgtttgtt acatagtgaa ccgggtgtgt ctgcataata 420
agcttatgtg tttgtttaga aatgaatta ttgtttaaa aaaaaaaaaaaaaaaa 476

<210> 12

<211> 58

<212> PRT

<213> *Triticum aestivum*

<400> 12

Ala Arg Ala Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln
1 5 10 15

Glu Ala Lys Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Thr
20 25 30

Ala Glu Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu
35 40 45

Ser Asn Met Asp Asp Tyr Ser Tyr Val Gln
50 55

<210> 13

<211> 2093

<212> DNA

<213> *Parthenium argentatum* Grey

<400> 13

gcacgagcgt gtacatagta aaaaaaccct ccagccacca catgatggct tcatctacca 60
ccacacctccc tctcattctc cacgatgatc ctgaaaacct ccaggaaccc accggattta 120
cgggggttcg tcgtccatcc atcgaaaaag cgcttgcgt aacccttgcgt tcggttatgg 180
taatctgtgg tctgggtgtt gtaatcagca accagacaca ggtaccacaa gtagccaaca 240
gccatcaagg tgccgccacc acattcaca ctcagttgcc aaaaatagat atgaaacggg 300
ttccgggaga gttggattcg ggtgctgatg tccaatggca acgctccgct tatcattttc 360
aacctgacaa aaactacatt agtgcattcgt atggcccaat gtatcacatg ggtatggtacc 420
atctatTTTA tcagtacaac ccagaatctg ccatatgggg caacatcaca tgggtcact 480

cggatccaa	agacatgtac	aactgggtcc	atctcccttt	cgccatgggtt	ccggaccatt	540
ggtacgacat	cgaaggcgtc	atgacaggtt	ccgccacagt	cctcccaaac	ggtgagatca	600
tcatgcttta	cacgggcaat	gcgtacgatc	tctcccaagt	acaatgctta	gcgtacgcag	660
tcaactcatac	agatccactt	cttataagagt	ggaaaaaaata	cgaaggcaac	ccggttttat	720
tgccgcccccc	aggggtgggt	tacaaggatt	ttcgggaccc	atctacattt	tggctgggccc	780
ccgatggtga	atatagaatg	gtaatgggtt	ccaagcacaa	cgagactatt	gttgtgtt	840
tgattttacca	taccactaat	tttacgcatt	ttgaattgaa	tgaggaggtg	tttcatgcgg	900
tcccacatac	tgttatgtgg	gaatgcgttg	atctttatcc	ggatatccacc	acacacacaaa	960
acgggttggaa	catgggtggat	aatgggcca	atgtaaaata	cgtgtgaaa	caaagtgggg	1020
atgaagatcg	ccatgattgg	tatgcgattt	gaagttatga	ttgggtgaat	gataagtgg	1080
acccggatga	cccgaaaaac	gatgtggta	tcgggttaag	atacgattac	ggaaagttt	1140
atgcgtccaa	gacgttttat	gaccaacata	agaaaaaggaa	ggtcctttgg	qgctatgtt	1200
gagaaaccga	tcccggaaaag	tatgaccta	caaaggatgg	ggctaacata	ttgaatattt	1260
caaggaccgt	cgttttggac	acgaaaacta	aaaccaattt	gattcaatgg	ccaattgagg	1320
aaaccggaaaa	acttaggtcg	aaaaagtatg	ataaattttgt	agatgtggag	tttcgaccgg	1380
ggtcactcat	tcccctcgag	ataggtacag	ccacacagtt	ggatatagtt	gcgacattcg	1440
aagttgatca	aatgatgtt	gaatcaacgc	tagaagccga	tgttctattt	aactgcacga	1500
ctagtgttgg	ctcagttgg	agggggcgtgt	tgggaccgtt	tggtgtgggt	gttctagct	1560
atgcccagcg	caccgaacaa	cttcctgtgt	atttctataat	tgcaaaagat	accgacggga	1620
cgtcaagaac	ctactttgt	gctgatgaaa	caagatcattc	caaggatgt	gacgtgggg	1680
aatgggtgt	tggaaagcgt	gttcctgtcc	tcccttaacga	aaagtacaat	atgaggttac	1740
tggtgttgc	ttcgatagt	gagggattt	cacaaaaacgg	aagaacgggt	gtgacatcg	1800
gagtgatcc	aacgaaggca	atttacaacg	ctgcgaaggt	gttttggtt	aacaacgcga	1860
ccgggatttag	ggtgaaggcg	tcggtaaga	tttggaaagat	ggcggaaagca	gaactcaacc	1920
cttcccagt	tactgggtgg	acttctgtat	ggctagattt	tggtcctat	atgtgtgt	1980
tactatcg	aggatataatgt	cttggactgt	gggggttatta	ttgttaattt	atatgtatgt	2040
tctgttactt	ttgaggttct	agttaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaa	2093

<210> 14

<211> 635

<212> PRT

<213> *Parthenium argentatum* Grey

<400> 14

Met	Met	Ala	Ser	Ser	Thr	Thr	Thr	Ser	Pro	Leu	Ile	Leu	His	Asp	Asp
1				5					10				15		

Pro Glu Asn Leu Gln Glu Pro Thr Gly Phe Thr Gly Val Arg Arg Pro
20 25 30

Cys Gly Leu Val Ala Val Ile Ser Asn Gln Thr Gln Val Pro Gln Val
50 55 60

Ala Asn Ser His Gln Gly Ala Ala Thr Thr Phe Thr Thr Gln Leu Pro
65 70 75 80

Lys Ile Asp Met Lys Arg Val Pro Gly Glu Leu Asp Ser Gly Ala Asp
85 90 95

Val Gln Trp Gln Arg Ser Ala Tyr His Phe Gln Pro Asp Lys Asn Tyr
100 105 110

Ile Ser Asp Pro Asp Gly Pro Met Tyr His Met Gly Trp Tyr His Leu
115 120 125

Phe Tyr Gln Tyr Asn Pro Glu Ser Ala Ile Trp Gly Asn Ile Thr Trp
130 135 140

Gly His Ser Val Ser Lys Asp Met Ile Asn Trp Phe His Leu Pro Phe
 145 150 155 160
 Ala Met Val Pro Asp His Trp Tyr Asp Ile Glu Gly Val Met Thr Gly
 165 170 175
 Ser Ala Thr Val Leu Pro Asn Gly Glu Ile Ile Met Leu Tyr Thr Gly
 180 185 190
 Asn Ala Tyr Asp Leu Ser Gln Val Gln Cys Leu Ala Tyr Ala Val Asn
 195 200 205
 Ser Ser Asp Pro Leu Leu Ile Glu Trp Lys Lys Tyr Glu Gly Asn Pro
 210 215 220
 Val Leu Leu Pro Pro Pro Gly Val Gly Tyr Lys Asp Phe Arg Asp Pro
 225 230 235 240
 Ser Thr Leu Trp Leu Gly Pro Asp Gly Glu Tyr Arg Met Val Met Gly
 245 250 255
 Ser Lys His Asn Glu Thr Ile Gly Cys Ala Leu Ile Tyr His Thr Thr
 260 265 270
 Asn Phe Thr His Phe Glu Leu Asn Glu Glu Val Leu His Ala Val Pro
 275 280 285
 His Thr Gly Met Trp Glu Cys Val Asp Leu Tyr Pro Val Ser Thr Thr
 290 295 300
 His Thr Asn Gly Leu Asp Met Val Asp Asn Gly Pro Asn Val Lys Tyr
 305 310 315 320
 Val Leu Lys Gln Ser Gly Asp Glu Asp Arg His Asp Trp Tyr Ala Ile
 325 330 335
 Gly Ser Tyr Asp Trp Val Asn Asp Lys Trp Tyr Pro Asp Asp Pro Glu
 340 345 350
 Asn Asp Val Gly Ile Gly Leu Arg Tyr Asp Tyr Gly Lys Phe Tyr Ala
 355 360 365
 Ser Lys Thr Phe Tyr Asp Gln His Lys Lys Arg Arg Val Leu Trp Gly
 370 375 380
 Tyr Val Gly Glu Thr Asp Pro Glu Lys Tyr Asp Leu Thr Lys Gly Trp
 385 390 395 400
 Ala Asn Ile Leu Asn Ile Pro Arg Thr Val Val Leu Asp Thr Lys Thr
 405 410 415
 Lys Thr Asn Leu Ile Gln Trp Pro Ile Glu Glu Thr Glu Lys Leu Arg
 420 425 430
 Ser Lys Lys Tyr Asp Lys Phe Val Asp Val Glu Leu Arg Pro Gly Ser
 435 440 445
 Leu Ile Pro Leu Glu Ile Gly Thr Ala Thr Gln Leu Asp Ile Val Ala
 450 455 460

Thr Phe Glu Val Asp Gln Met Met Leu Glu Ser Thr Leu Glu Ala Asp
465 470 475 480

Val Leu Phe Asn Cys Thr Thr Ser Val Gly Ser Val Gly Arg Gly Val
485 490 495

Leu Gly Pro Phe Gly Val Val Val Leu Ala Asp Ala Gln Arg Thr Glu
500 505 510

Gln Leu Pro Val Tyr Phe Tyr Ile Ala Lys Asp Thr Asp Gly Thr Ser
515 520 525

Arg Thr Tyr Phe Cys Ala Asp Glu Thr Arg Ser Ser Lys Asp Val Asp
530 535 540

Val Gly Lys Trp Val Tyr Gly Ser Ser Val Pro Val Leu Pro Asn Glu
545 550 555 560

Lys Tyr Asn Met Arg Leu Leu Val Asp His Ser Ile Val Glu Gly Phe
565 570 575

Ala Gln Asn Gly Arg Thr Val Val Thr Ser Arg Val Tyr Pro Thr Lys
580 585 590

Ala Ile Tyr Asn Ala Ala Lys Val Phe Leu Phe Asn Asn Ala Thr Gly
595 600 605

Ile Arg Val Lys Ala Ser Val Lys Ile Trp Lys Met Ala Glu Ala Glu
610 615 620

Leu Asn Pro Phe Pro Val Thr Gly Trp Thr Ser
625 630 635

<210> 15

<211> 2107

<212> DNA

<213> Helianthus sp.

<400> 15

gcaccacaaac acacttaagt gcgtgtacat aataaagaaa aaaccctcct gccaccacat 60
gatggcttca tccaccacca ccacccctct catttcctcat gatgaccctg aaaacctccc 120
agaactcacc ggatctccga caactcgctg tctatccatc gcaaaagtgc tttccccggat 180
ccttgtttcg gttctagttt catgtgctct tggtgcttta atcaacaacc aaacatatga 240
accaccccgcc gccaccacat tcgcaactca gttgccaat attgatctga agcgggttcc 300
aggaaaagttg gattcgagtg ctgagggtga atggcaacga tccgcttatac attttcaacc 360
cgacaaaaat ttcatctatgt atccctgatgg cccaatgttat cacatggat ggtaccatct 420
attctatcatg tacaaccctg aatctgccc ctggggcaac atcacatggg gccactcggt 480
atcgaaagac atgatcaact gttccatct cccttcgccc atgggtccctg accattggta 540
cgacatcgaa ggtgtcatga cgggttcggc tacagtctc cctaattggc aaatcatcat 600
gctttacacg ggcaacgcgt acgatctctc ccaagtacaa tgcttggcat acgctgtcaa 660
ctcgctggat ccccttctta tagagtggaa aaaatatgaa ggttaaccctg tcttggatccc 720
accaccagga gtgggctaca aggactttcg ggaccatcc acattgtggt tggggccctga 780
tggtaatata agaatggtaa tgggtccaa gcacaacgag actattggat gtgctttgat 840
ttaccatacc actaatttttca cgcattttga attgaaaagag gaggtgcttc atgcagtccc 900
acataactggat atgtggaaat gtgttgcattt ttaccctgtc tccaccgtac acacaaacgg 960
gttggacatgt gtggataacg ggcacaaatgt taaatacgtg ttgaaacaaa gtggggatga 1020
agatcgccat gattggatgt caatttggaa ttatgtatgtg gtgaatgata agtggtaccc 1080
ggatgaccgg gaaaatgtatg tgggtattgg attaagatat gattttggaa aattttatgc 1140
gtccaagact ttttatgacc aacataagaa gaggagggtc ctttgggct atgttggaga 1200

aaccgatccc caaaagtatg acatttcaaa gggatggct aacatttga atattccaag 1260
 aaccgtcggt ttggcacaca aaacccaaac caatttgatt caatggccaa tcgaggaaac 1320
 cggaaaacctt aggtcaaaaa cgtacgatga atttaaagac gtggagctc gaccgggtc 1380
 actcggtccc cttgagatag gcacagccac acagttggat atagttgcga cattcgaaat 1440
 cgacccaaag atgttgaat caacgctaga ggccgatgtt ctattcaatt gcacgactag 1500
 tgaaggctcg gttcaaggg gtgcgttgg accgttggt gtgggtgtc tagccgatgc 1560
 ccaacgctcc gaacaacttc ctgtatactt ctatatcgca aaagatatcg atgaaacctc 1620
 acgaacttac ttttgcccg atgaaacaag atcatccaag gatgtaaagcg tagggaaatg 1680
 ggtgtacgga agcagtgttc ctgtcctccc aggcgaaaag tacaatatga gtttattgg 1740
 ggatcattcg atagttgagg gatttgcaca aaacgggaga accgtggta catcaagagt 1800
 gtatccaaca aaggcgatct acaacgctgc gaagggttt ttgttcaaca acgcgactgg 1860
 gatcagtgtg aaggcgctcg tcaagatctg gaagatggcg aaagcagaac tcaatcctt 1920
 ccctttccct gggtgactt ttgaactttg atggttagat tttggaccct atatagttat 1980
 tatcatgaag cataagttt gactggagg ggttatttta taatttata tgcatgttct 2040
 attacttgtg agtttatagt atataattaa attattatta taaaaaaaaaaaaaaa 2100
 aaaaaaaaaa 2107

<210> 16

<211> 630

<212> PRT

<213> Helianthus sp.

<400> 16

Met	Met	Ala	Ser	Ser	Thr	Thr	Thr	Thr	Pro	Leu	Ile	Leu	His	Asp	Asp
1															15

Pro	Glu	Asn	Leu	Pro	Glu	Leu	Thr	Gly	Ser	Pro	Thr	Thr	Arg	Arg	Leu
															30
			20					25							

Ser	Ile	Ala	Lys	Val	Leu	Ser	Gly	Ile	Leu	Val	Ser	Val	Leu	Val	Thr
															45
			35					40							

Cys	Ala	Leu	Val	Ala	Leu	Ile	Asn	Asn	Gln	Thr	Tyr	Glu	Pro	Pro	Ala
															60
			50				55								

Ala	Thr	Thr	Phe	Ala	Thr	Gln	Leu	Pro	Asn	Ile	Asp	Leu	Lys	Arg	Val
															80
			65				70				75				

Pro	Gly	Lys	Leu	Asp	Ser	Ser	Ala	Glu	Val	Glu	Trp	Gln	Arg	Ser	Ala
															95
			85					90							

Tyr	His	Phe	Gln	Pro	Asp	Lys	Asn	Phe	Ile	Ser	Asp	Pro	Asp	Gly	Pro
															110
			100					105							

Met	Tyr	His	Met	Gly	Trp	Tyr	His	Leu	Phe	Tyr	Gln	Tyr	Asn	Pro	Glu
															125
			115				120								

Ser	Ala	Ile	Trp	Gly	Asn	Ile	Thr	Trp	Gly	His	Ser	Val	Ser	Lys	Asp
															140
			130				135								

Met	Ile	Asn	Trp	Phe	His	Leu	Pro	Phe	Ala	Met	Val	Pro	Asp	His	Trp
															160
			145				150			155					

Tyr	Asp	Ile	Glu	Gly	Val	Met	Thr	Gly	Ser	Ala	Thr	Val	Leu	Pro	Asn
															175
			165				170								

Gly	Gln	Ile	Ile	Met	Leu	Tyr	Thr	Gly	Asn	Ala	Tyr	Asp	Leu	Ser	Gln
															190
			180				185				185				

Val Gln Cys Leu Ala Tyr Ala Val Asn Ser Ser Asp Pro Leu Leu Ile
 195 200 205
 Glu Trp Lys Lys Tyr Glu Gly Asn Pro Val Leu Phe Pro Pro Pro Gly
 210 215 220
 Val Gly Tyr Lys Asp Phe Arg Asp Pro Ser Thr Leu Trp Leu Gly Pro
 225 230 235 240
 Asp Gly Glu Tyr Arg Met Val Met Gly Ser Lys His Asn Glu Thr Ile
 245 250 255
 Gly Cys Ala Leu Ile Tyr His Thr Thr Asn Phe Thr His Phe Glu Leu
 260 265 270
 Lys Glu Glu Val Leu His Ala Val Pro His Thr Gly Met Trp Glu Cys
 275 280 285
 Val Asp Leu Tyr Pro Val Ser Thr Val His Thr Asn Gly Leu Asp Met
 290 295 300
 Val Asp Asn Gly Pro Asn Val Lys Tyr Val Leu Lys Gln Ser Gly Asp
 305 310 315 320
 Glu Asp Arg His Asp Trp Tyr Ala Ile Gly Ser Tyr Asp Val Val Asn
 325 330 335
 Asp Lys Trp Tyr Pro Asp Asp Pro Glu Asn Asp Val Gly Ile Gly Leu
 340 345 350
 Arg Tyr Asp Phe Gly Lys Phe Tyr Ala Ser Lys Thr Phe Tyr Asp Gln
 355 360 365
 His Lys Lys Arg Arg Val Leu Trp Gly Tyr Val Gly Glu Thr Asp Pro
 370 375 380
 Gln Lys Tyr Asp Ile Ser Lys Gly Trp Ala Asn Ile Leu Asn Ile Pro
 385 390 395 400
 Arg Thr Val Val Leu Asp Thr Lys Thr Lys Thr Asn Leu Ile Gln Trp
 405 410 415
 Pro Ile Glu Glu Thr Glu Asn Leu Arg Ser Lys Thr Tyr Asp Glu Phe
 420 425 430
 Lys Asp Val Glu Leu Arg Pro Gly Ser Leu Val Pro Leu Glu Ile Gly
 435 440 445
 Thr Ala Thr Gln Leu Asp Ile Val Ala Thr Phe Glu Ile Asp Gln Lys
 450 455 460
 Met Leu Glu Ser Thr Leu Glu Ala Asp Val Leu Phe Asn Cys Thr Thr
 465 470 475 480
 Ser Glu Gly Ser Val Ala Arg Gly Ala Leu Gly Pro Phe Gly Val Val
 485 490 495
 Val Leu Ala Asp Ala Gln Arg Ser Glu Gln Leu Pro Val Tyr Phe Tyr
 500 505 510

Ile Ala Lys Asp Ile Asp Gly Thr Ser Arg Thr Tyr Phe Cys Ala Asp
 515 520 525
 Glu Thr Arg Ser Ser Lys Asp Val Ser Val Gly Lys Trp Val Tyr Gly
 530 535 540
 Ser Ser Val Pro Val Leu Pro Gly Glu Lys Tyr Asn Met Arg Leu Leu
 545 550 555 560
 Val Asp His Ser Ile Val Glu Gly Phe Ala Gln Asn Gly Arg Thr Val
 565 570 575
 Val Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Asn Ala Ala Lys
 580 585 590
 Val Phe Leu Phe Asn Asn Ala Thr Gly Ile Ser Val Lys Ala Ser Ile
 595 600 605
 Lys Ile Trp Lys Met Ala Lys Ala Glu Leu Asn Pro Phe Pro Leu Pro
 610 615 620
 Gly Trp Thr Phe Glu Leu
 625 630
 <210> 17
 <211> 615
 <212> PRT
 <213> Helianthus tuberosus
 <400> 17
 Met Gln Thr Pro Glu Pro Phe Thr Asp Leu Glu His Glu Pro His Thr
 1 5 10 15
 Pro Leu Leu Asp His His Asn Pro Pro Pro Gln Thr Thr Lys
 20 25 30
 Pro Leu Phe Thr Arg Val Val Ser Gly Val Thr Phe Val Leu Phe Phe
 35 40 45
 Phe Gly Phe Ala Ile Val Phe Ile Val Leu Asn Gln Gln Asn Ser Ser
 50 55 60
 Val Arg Ile Val Thr Asn Ser Glu Lys Ser Phe Ile Arg Tyr Ser Gln
 65 70 75 80
 Thr Asp Arg Leu Ser Trp Glu Arg Thr Ala Phe His Phe Gln Pro Ala
 85 90 95
 Lys Asn Phe Ile Tyr Asp Pro Asp Gly Gln Leu Phe His Met Gly Trp
 100 105 110
 Tyr His Met Phe Tyr Gln Tyr Asn Pro Tyr Ala Pro Val Trp Gly Asn
 115 120 125
 Met Ser Trp Gly His Ser Val Ser Lys Asp Met Ile Asn Trp Tyr Glu
 130 135 140
 Leu Pro Val Ala Met Val Pro Thr Glu Trp Tyr Asp Ile Glu Gly Val
 145 150 155 160

Leu Ser Gly Ser Thr Thr Val Leu Pro Asn Gly Gln Ile Phe Ala Leu
 165 170 175
 Tyr Thr Gly Asn Ala Asn Asp Phe Ser Gln Leu Gln Cys Lys Ala Val
 180 185 190
 Pro Val Asn Leu Ser Asp Pro Leu Leu Ile Glu Trp Val Lys Tyr Glu
 195 200 205
 Asp Asn Pro Ile Leu Tyr Thr Pro Pro Gly Ile Gly Leu Lys Asp Tyr
 210 215 220
 Arg Asp Pro Ser Thr Val Trp Thr Gly Pro Asp Gly Lys His Arg Met
 225 230 235 240
 Ile Met Gly Thr Lys Arg Gly Asn Thr Gly Met Val Leu Val Tyr Tyr
 245 250 255
 Thr Thr Asp Tyr Thr Asn Tyr Glu Leu Leu Asp Glu Pro Leu His Ser
 260 265 270
 Val Pro Asn Thr Asp Met Trp Glu Cys Val Asp Phe Tyr Pro Val Ser
 275 280 285
 Leu Thr Asn Asp Ser Ala Leu Asp Met Ala Ala Tyr Gly Ser Gly Ile
 290 295 300
 Lys His Val Ile Lys Glu Ser Trp Glu Gly His Gly Met Asp Trp Tyr
 305 310 315 320
 Ser Ile Gly Thr Tyr Asp Ala Ile Asn Asp Lys Trp Thr Pro Asp Asn
 325 330 335
 Pro Glu Leu Asp Val Gly Ile Gly Leu Arg Cys Asp Tyr Gly Arg Phe
 340 345 350
 Phe Ala Ser Lys Ser Leu Tyr Asp Pro Leu Lys Lys Arg Arg Ile Thr
 355 360 365
 Trp Gly Tyr Val Gly Glu Ser Asp Ser Ala Asp Gln Asp Leu Ser Arg
 370 375 380
 Gly Trp Ala Thr Val Tyr Asn Val Gly Arg Thr Ile Val Leu Asp Arg
 385 390 395 400
 Lys Thr Gly Thr His Leu Leu His Trp Pro Val Glu Glu Val Glu Ser
 405 410 415
 Leu Arg Tyr Asn Gly Gln Glu Phe Lys Glu Ile Lys Leu Glu Pro Gly
 420 425 430
 Ser Ile Ile Pro Leu Asp Ile Gly Thr Ala Thr Gln Leu Asp Ile Val
 435 440 445
 Ala Thr Phe Glu Val Asp Gln Ala Ala Leu Asn Ala Thr Ser Glu Thr
 450 455 460
 Asp Asp Ile Tyr Gly Cys Thr Thr Ser Leu Gly Ala Ala Gln Arg Gly
 465 470 475 480

Ser Leu Gly Pro Phe Gly Leu Ala Val Leu Ala Asp Gly Thr Leu Ser
 485 490 495

 Glu Leu Thr Pro Val Tyr Phe Tyr Ile Ala Lys Lys Ala Asp Gly Gly
 500 505 510

 Val Ser Thr His Phe Cys Thr Asp Lys Leu Arg Ser Ser Leu Asp Tyr
 515 520 525

 Asp Gly Glu Arg Val Val Tyr Gly Gly Thr Val Pro Val Leu Asp Asp
 530 535 540

 Glu Glu Leu Thr Met Arg Leu Leu Val Asp His Ser Ile Val Glu Gly
 545 550 555 560

 Phe Ala Gln Gly Gly Arg Thr Val Ile Thr Ser Arg Ala Tyr Pro Thr
 565 570 575

 Lys Ala Ile Tyr Glu Gln Ala Lys Leu Phe Leu Phe Asn Asn Ala Thr
 580 585 590

 Gly Thr Ser Val Lys Ala Ser Leu Lys Ile Trp Gln Met Ala Ser Ala
 595 600 605

 Pro Ile His Gln Tyr Pro Phe
 610 615

 <210> 18
 <211> 630
 <212> PRT
 <213> Helianthus tuberosus

 <400> 18
 Met Met Ala Ser Ser Thr Thr Thr Pro Leu Ile Leu His Asp Asp
 1 5 10 15

 Pro Glu Asn Leu Pro Glu Leu Thr Gly Ser Pro Thr Thr Arg Arg Leu
 20 25 30

 Ser Ile Ala Lys Val Leu Ser Gly Ile Leu Val Ser Val Leu Val Ile
 35 40 45

 Gly Ala Leu Val Ala Leu Ile Asn Asn Gln Thr Tyr Glu Ser Pro Ser
 50 55 60

 Ala Thr Thr Phe Val Thr Gln Leu Pro Asn Ile Asp Leu Lys Arg Val
 65 70 75 80

 Pro Gly Lys Leu Asp Ser Ser Ala Glu Val Glu Trp Gln Arg Ser Thr
 85 90 95

 Tyr His Phe Gln Pro Asp Lys Asn Phe Ile Ser Asp Pro Asp Gly Pro
 100 105 110

 Met Tyr His Met Gly Trp Tyr His Leu Phe Tyr Gln Tyr Asn Pro Gln
 115 120 125

 Ser Ala Ile Trp Gly Asn Ile Thr Trp Gly His Ser Val Ser Lys Asp
 130 135 140

Met Ile Asn Trp Phe His Leu Pro Phe Ala Met Val Pro Asp His Trp
 145 150 155 160
 Tyr Asp Ile Glu Gly Val Met Thr Gly Ser Ala Thr Val Leu Pro Asn
 165 170 175
 Gly Gln Ile Ile Met Leu Tyr Ser Gly Asn Ala Tyr Asp Leu Ser Gln
 180 185 190
 Val Gln Cys Leu Ala Tyr Ala Val Asn Ser Ser Asp Pro Leu Leu Ile
 195 200 205
 Glu Trp Lys Lys Tyr Glu Gly Asn Pro Val Leu Leu Pro Pro Pro Gly
 210 215 220
 Val Gly Tyr Lys Asp Phe Arg Asp Pro Ser Thr Leu Trp Ser Gly Pro
 225 230 235 240
 Asp Gly Glu Tyr Arg Met Val Met Gly Ser Lys His Asn Glu Thr Ile
 245 250 255
 Gly Cys Ala Leu Ile Tyr His Thr Thr Asn Phe Thr His Phe Glu Leu
 260 265 270
 Lys Glu Glu Val Leu His Ala Val Pro His Thr Gly Met Trp Glu Cys
 275 280 285
 Val Asp Leu Tyr Pro Val Ser Thr Val His Thr Asn Gly Leu Asp Met
 290 295 300
 Val Asp Asn Gly Pro Asn Val Lys Tyr Val Leu Lys Gln Ser Gly Asp
 305 310 315 320
 Glu Asp Arg His Asp Trp Tyr Ala Ile Gly Ser Tyr Asp Ile Val Asn
 325 330 335
 Asp Lys Trp Tyr Pro Asp Asp Pro Glu Asn Asp Val Gly Ile Gly Leu
 340 345 350
 Arg Tyr Asp Phe Gly Lys Phe Tyr Ala Ser Lys Thr Phe Tyr Asp Gln
 355 360 365
 His Lys Lys Arg Arg Val Leu Trp Gly Tyr Val Gly Glu Thr Asp Pro
 370 375 380
 Gln Lys Tyr Asp Leu Ser Lys Gly Trp Ala Asn Ile Leu Asn Ile Pro
 385 390 395 400
 Arg Thr Val Val Leu Asp Leu Glu Thr Lys Thr Asn Leu Ile Gln Trp
 405 410 415
 Pro Ile Glu Glu Thr Glu Asn Leu Arg Ser Lys Lys Tyr Asp Glu Phe
 420 425 430
 Lys Asp Val Glu Leu Arg Pro Gly Ala Leu Val Pro Leu Glu Ile Gly
 435 440 445
 Thr Ala Thr Gln Leu Asp Ile Val Ala Thr Phe Glu Ile Asp Gln Lys
 450 455 460

Met Leu Glu Ser Thr Leu Glu Ala Asp Val Leu Phe Asn Cys Thr Thr
 465 470 475 480

Ser Glu Gly Ser Val Ala Arg Ser Val Leu Gly Pro Phe Gly Val Val
 485 490 495

Val Leu Ala Asp Ala Gln Arg Ser Glu Gln Leu Pro Val Tyr Phe Tyr
 500 505 510

Ile Ala Lys Asp Ile Asp Gly Thr Ser Arg Thr Tyr Phe Cys Ala Asp
 515 520 525

Glu Thr Arg Ser Ser Lys Asp Val Ser Val Gly Lys Trp Val Tyr Gly
 530 535 540

Ser Ser Val Pro Val Leu Pro Gly Glu Lys Tyr Asn Met Arg Leu Leu
 545 550 555 560

Val Asp His Ser Ile Val Glu Gly Phe Ala Gln Asn Gly Arg Thr Val
 565 570 575

Val Thr Ser Arg Val Tyr Pro Thr Lys Ala Ile Tyr Asn Ala Ala Lys
 580 585 590

Val Phe Leu Phe Asn Asn Ala Thr Gly Ile Ser Val Lys Ala Ser Ile
 595 600 605

Lys Ile Trp Lys Met Gly Glu Ala Glu Leu Asn Pro Phe Pro Leu Pro
 610 615 620

Gly Trp Thr Phe Glu Leu
 625 630

<210> 19
 <211> 2115
 <212> DNA
 <213> Triticum aestivum

<400> 19

gggctttca	gcgaaacaac	aaccgaccgg	tctttccac	ggcgcgagga	ttaattggcg	60
gaggtcgtc	cggcgccga	gtacggcggg	aggtcgtttt	ccggcgagg	aaaaagatgg	120
cgagcgaatc	cagtccgggg	ggagattcaa	cttcaactcg	gaggcgaggc	ggacaagaac	180
ccctggctgt	cctcgctct	gccaaagaacc	aatcctcctc	cgaggagcgg	gcagggggcg	240
gcctgcgggt	cgacgaggag	gccgcggccq	ggttcccgtg	gagcaacgag	atgctgcagt	300
ggcagcgcag	tggctaccat	ttccagacgg	ccaagaacta	catgagcgat	cccaacggtc	360
ttatgtacta	caatggatgg	taccacatgt	tcttccagta	caaccgggt	ggcacccgatt	420
gggacgacgg	catggagtgg	ggccatgcgg	tgtctcgaa	ccttgtcactg	tggcgcaccc	480
tccctattgc	catggatggct	gaccagtgg	acgacatcct	gggggtcctt	tcgggtctta	540
tgacgggtct	accaaattggc	acggtcatca	tgtatctacac	gggggcccacc	aacgcctctg	600
ccgtttaggt	gcagtgcatc	gccacccccc	ccgaccccaa	cgaccccttc	ctccggcgct	660
ggaccaagca	ccccggcaac	cccgatcatct	ggtcggcc	ggggatcggc	accaaggatt	720
ttcgagaccc	gatgactgct	tggtacgatg	aatctgtatga	cacatggcgc	accctccttg	780
ggtccaagga	tgaccacgac	ggtcaccacg	atgggatcgc	catgatgtac	aagaccaagg	840
acttccttaa	ctacgagctc	atccccgggt	tcttgcacg	agtccagcgc	accggcgagt	900
gggagtgcac	tgacttctac	cctgtcgccc	acagaagcaa	cgacaactca	tcggagatgt	960
tgcacgtgtt	gaaggcgagc	atggacgacg	aacggcacga	ctactactcg	ctagggcacgt	1020
acgactcggc	agcaaacgcg	tggacgcccga	tcgacccgga	gctcgacttg	gggatcgggc	1080
ttagatacga	ctggggtaag	tttatgcgt	ccacccctgtt	ctatgatccg	gcaaagaagc	1140

ggcgcgtgct gatggggta ctcggcgagg tcgactccaa gcgggctgat gtcgtgaagg 1200
 gatgggcctc gattcagtca gttccaagga caattgctct cgacgagaag accggacga 1260
 acctcctcct ctggccgtg gaggagattt agaccctccg cctcaacgcc accgaactta 1320
 ggcacgtcac ccttaacacc ggctccgtca tccatatccc gctccgccaa ggcactcagc 1380
 tcgacatcgaa ggcaacttcc caccttgatg cttctgcgt cgctgcctc aatgaggccg 1440
 atgtggctca caactgcagc agcagcggc gtqctgttaa ccgcggcgcg cttagcccc 1500
 tcggcctcct cgtcctcgct gctggtgacc gccgtggcga gcaaaccggc gtgtatttct 1560
 acgtgtctag ggggctcgac ggaggcctcc ataccagctt ctgccaagac gagttgcgg 1620
 cgtcacgggc caaggatgtc acgaagcggg tgattggag cacggtgccg gtgctcgacg 1680
 gcgaggctt ctcgatgagg gtgctcggtt accactccat cgtgcaggcc ttgcgtatgg 1740
 gcgaggaggac cacatgcac tcgcgggtt acccgatgga ggcctatcag gagggaaaag 1800
 tgtacttgtt caacaatgcg accggtgcca gcgtcatggc ggaaaggctc gtgcgcacg 1860
 agatggactc agcacacaac cagctctcca atatggacga tcactcgat gttcaatgaa 1920
 gctcttgcat ctcatcgata ataagctaca ttggatcaaa gacgcgcacc aaggaaggcc 1980
 aagacatatg taaatgattc cgcacagcct cgcttgcaga attgaaacat ctatccttgg 2040
 gtcatgttct gcattgtatgt cactgtgaac tacagtatat tactttgtt ggcgtagaaa 2100
 aaaaaaaaaaaaaaaa aaaaaa 2115

<210> 20

<211> 600

<212> PRT

<213> Triticum aestivum

<400> 20

Met	Ala	Ser	Glu	Ser	Ser	Arg	Arg	Gly	Asp	Ser	Thr	Ser	Thr	Arg	Arg
1														15	

Arg	Ser	Gly	Gln	Glu	Pro	Leu	Ala	Val	Leu	Val	Ser	Ala	Lys	Asn	Gln
													20	30	

Ser	Ser	Ser	Glu	Glu	Arg	Ala	Gly	Gly	Gly	Leu	Arg	Val	Asp	Glu	Glu
													35	45	

Ala	Ala	Ala	Gly	Phe	Pro	Trp	Ser	Asn	Glu	Met	Leu	Gln	Trp	Gln	Arg
													50	60	

Ser	Gly	Tyr	His	Phe	Gln	Thr	Ala	Lys	Asn	Tyr	Met	Ser	Asp	Pro	Asn
													65	80	

Gly	Leu	Met	Tyr	Tyr	Asn	Gly	Trp	Tyr	His	Met	Phe	Phe	Gln	Tyr	Asn
													85	95	

Pro	Val	Gly	Thr	Asp	Trp	Asp	Asp	Gly	Met	Glu	Trp	Gly	His	Ala	Val
													100	110	

Ser	Arg	Asn	Leu	Val	Thr	Trp	Arg	Thr	Leu	Pro	Ile	Ala	Met	Val	Ala
													115	125	

Asp	Gln	Trp	Tyr	Asp	Ile	Leu	Gly	Val	Leu	Ser	Gly	Ser	Met	Thr	Val
													130	140	

Leu	Pro	Asn	Gly	Thr	Val	Ile	Met	Ile	Tyr	Thr	Gly	Ala	Thr	Asn	Ala
													145	160	

Ser	Ala	Val	Glu	Val	Gln	Cys	Ile	Ala	Thr	Pro	Ala	Asp	Pro	Asn	Asp
													165	175	

Pro	Phe	Leu	Arg	Arg	Trp	Thr	Lys	His	Pro	Ala	Asn	Pro	Val	Ile	Trp
													180	190	

Ser Pro Pro Gly Ile Gly Thr Lys Asp Phe Arg Asp Pro Met Thr Ala
 195 200 205
 Trp Tyr Asp Glu Ser Asp Asp Thr Trp Arg Thr Leu Leu Gly Ser Lys
 210 215 220
 Asp Asp His Asp Gly His His Asp Gly Ile Ala Met Met Tyr Lys Thr
 225 230 235 240
 Lys Asp Phe Leu Asn Tyr Glu Leu Ile Pro Gly Ile Leu His Arg Val
 245 250 255
 Gln Arg Thr Gly Glu Trp Glu Cys Ile Asp Phe Tyr Pro Val Gly His
 260 265 270
 Arg Ser Asn Asp Asn Ser Ser Glu Met Leu His Val Leu Lys Ala Ser
 275 280 285
 Met Asp Asp Glu Arg His Asp Tyr Tyr Ser Leu Gly Thr Tyr Asp Ser
 290 295 300
 Ala Ala Asn Ala Trp Thr Pro Ile Asp Pro Glu Leu Asp Leu Gly Ile
 305 310 315 320
 Gly Leu Arg Tyr Asp Trp Gly Lys Phe Tyr Ala Ser Thr Ser Phe Tyr
 325 330 335
 Asp Pro Ala Lys Lys Arg Arg Val Leu Met Gly Tyr Val Gly Glu Val
 340 345 350
 Asp Ser Lys Arg Ala Asp Val Val Lys Gly Trp Ala Ser Ile Gln Ser
 355 360 365
 Val Pro Arg Thr Ile Ala Leu Asp Glu Lys Thr Arg Thr Asn Leu Leu
 370 375 380
 Leu Trp Pro Val Glu Glu Ile Glu Thr Leu Arg Leu Asn Ala Thr Glu
 385 390 395 400
 Leu Ser Asp Val Thr Leu Asn Thr Gly Ser Val Ile His Ile Pro Leu
 405 410 415
 Arg Gln Gly Thr Gln Leu Asp Ile Glu Ala Thr Phe His Leu Asp Ala
 420 425 430
 Ser Ala Val Ala Ala Leu Asn Glu Ala Asp Val Gly Tyr Asn Cys Ser
 435 440 445
 Ser Ser Gly Gly Ala Val Asn Arg Gly Ala Leu Gly Pro Phe Gly Leu
 450 455 460
 Leu Val Leu Ala Ala Gly Asp Arg Arg Gly Glu Gln Thr Ala Val Tyr
 465 470 475 480
 Phe Tyr Val Ser Arg Gly Leu Asp Gly Gly Leu His Thr Ser Phe Cys
 485 490 495
 Gln Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys Arg Val
 500 505 510

Ile Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Phe Ser Met Arg
 515 520 525
 Val Leu Val Asp His Ser Ile Val Gln Gly Phe Ala Met Gly Gly Arg
 530 535 540
 Thr Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ala Tyr Gln Glu Ala
 545 550 555 560
 Lys Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Met Ala Glu
 565 570 575
 Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu Ser Asn
 580 585 590
 Met Asp Asp His Ser Tyr Val Gln
 595 600

<210> 21
 <211> 625
 <212> PRT
 <213> Hordeum vulgare

<400> 21
 Met Gly Ser His Gly Lys Pro Pro Leu Pro Tyr Ala Tyr Lys Pro Leu
 1 5 10 15
 Pro Ser Asp Ala Ala Asp Gly Lys Arg Thr Gly Cys Met Arg Trp Ser
 20 25 30
 Ala Cys Ala Thr Val Leu Thr Ala Ser Ala Met Ala Val Val Val Val
 35 40 45
 Gly Ala Thr Leu Leu Ala Gly Leu Arg Met Glu Gln Ala Val Asp Glu
 50 55 60
 Glu Ala Ala Ala Gly Gly Phe Pro Trp Ser Asn Glu Met Leu Gln Trp
 65 70 75 80
 Gln Arg Ser Gly Tyr His Phe Gln Thr Ala Lys Asn Tyr Met Ser Asp
 85 90 95
 Pro Asn Gly Leu Met Tyr Tyr Arg Gly Trp Tyr His Met Phe Tyr Gln
 100 105 110
 Tyr Asn Pro Val Gly Thr Asp Trp Asp Asp Gly Met Glu Trp Gly His
 115 120 125
 Ala Val Ser Arg Asn Leu Val Gln Trp Arg Thr Leu Pro Ile Ala Met
 130 135 140
 Val Ala Asp Gln Trp Tyr Asp Ile Leu Gly Val Leu Ser Gly Ser Met
 145 150 155 160
 Thr Val Leu Pro Asn Gly Thr Val Ile Met Ile Tyr Thr Gly Ala Thr
 165 170 175
 Asn Ala Ser Ala Val Glu Val Gln Cys Ile Ala Thr Pro Ala Asp Pro
 180 185 190

Asn Asp Pro Leu Leu Arg Arg Trp Thr Lys His Pro Ala Asn Pro Val
 195 200 205
 Ile Trp Ser Pro Pro Gly Val Gly Thr Lys Asp Phe Arg Asp Pro Met
 210 215 220
 Thr Ala Trp Tyr Asp Glu Ser Asp Glu Thr Trp Arg Thr Leu Leu Gly
 225 230 235 240
 Ser Lys Asp Asp His Asp Gly His His Asp Gly Ile Ala Met Met Tyr
 245 250 255
 Lys Thr Lys Asp Phe Leu Asn Tyr Glu Leu Ile Pro Gly Ile Leu His
 260 265 270
 Arg Val Val Arg Thr Gly Glu Trp Glu Cys Ile Asp Phe Tyr Pro Val
 275 280 285
 Gly Arg Arg Ser Ser Asp Asn Ser Ser Glu Met Leu His Val Leu Lys
 290 295 300
 Ala Ser Met Asp Asp Glu Arg His Asp Tyr Tyr Ser Leu Gly Thr Tyr
 305 310 315 320
 Asp Ser Ala Ala Asn Thr Trp Thr Pro Ile Asp Pro Glu Leu Asp Leu
 325 330 335
 Gly Ile Gly Leu Arg Tyr Asp Trp Gly Lys Phe Tyr Ala Ser Thr Ser
 340 345 350
 Phe Tyr Asp Pro Ala Lys Asn Arg Arg Val Leu Met Gly Tyr Val Gly
 355 360 365
 Glu Val Asp Ser Lys Arg Ala Asp Val Val Lys Gly Trp Ala Ser Ile
 370 375 380
 Gln Ser Val Pro Arg Thr Val Ala Leu Asp Glu Lys Thr Arg Thr Asn
 385 390 395 400
 Leu Leu Leu Trp Pro Val Glu Glu Ile Glu Thr Leu Arg Leu Asn Ala
 405 410 415
 Thr Glu Leu Thr Asp Val Thr Ile Asn Thr Gly Ser Val Ile His Ile
 420 425 430
 Pro Leu Arg Gln Gly Thr Gln Leu Asp Ile Glu Ala Ser Phe His Leu
 435 440 445
 Asp Ala Ser Ala Val Ala Ala Leu Asn Glu Ala Asp Val Gly Tyr Asn
 450 455 460
 Cys Ser Ser Ser Gly Gly Ala Val Asn Arg Gly Ala Leu Gly Pro Phe
 465 470 475 480
 Gly Leu Leu Val Leu Ala Ala Gly Asp Arg Arg Gly Glu Gln Thr Ala
 485 490 495
 Val Tyr Phe Tyr Val Ser Arg Gly Leu Asp Gly Gly Leu His Thr Ser
 500 505 510

Phe Cys Gln Asp Glu Leu Arg Ser Ser Arg Ala Lys Asp Val Thr Lys
515 520 525

Arg Val Ile Gly Ser Thr Val Pro Val Leu Asp Gly Glu Ala Leu Ser
530 535 540

Met Arg Val Leu Val Asp His Ser Ile Val Gln Gly Phe Asp Met Gly
545 550 555 560

Gly Arg Thr Thr Met Thr Ser Arg Val Tyr Pro Met Glu Ser Tyr Gln
565 570 575

Glu Ala Arg Val Tyr Leu Phe Asn Asn Ala Thr Gly Ala Ser Val Thr
580 585 590

Ala Glu Arg Leu Val Val His Glu Met Asp Ser Ala His Asn Gln Leu
595 600 605

Ser Asn Glu Asp Asp Gly Met Tyr Leu His Gln Val Leu Glu Ser Arg
610 615 620

His
625